Space Weather Forecast

Issued on Sunday, 16 June 2024 at 12:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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We are aware of some disruption to data flow from the Space Weather Prediction Centre. As a result, our Alerts and Warnings service may experience delays or contain incomplete data.

Space Weather Forecast Headline: Isolated Moderate flares (R1-R2 radio blackouts) likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been low over the last 24hrs.

There are currently seven sunspots on the disc. The most complex groups all lie in the eastern solar hemisphere, and foremost amongst these is AR3712, a large and complex sunspot region which lies in the southeast. This region has continued to see proliferation of its intermediate spots as well as increasing in overall area in recent hours. Also of note is AR3716 in the northeast, which has also developed intermediate spots and continues to grow in size. The other regions on the disk appear generally stable or are in decline.

A faint coronal mass ejection (CME) observed in imagery leaving the southwest disk approximately 16/0720 UTC remains under investigation, otherwise no other Earth directed CMEs were in evidence in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds erratically declined from CME arrival early on the 15 Jun, generally averaging around 380-420 km/s but with brief peaks of 450-470 km/s recorded. The Interplanetary Magnetic Field (IMF), Bt, was initially moderate after the CME arrival, but declined fairly steadily to approach weak levels by the end of the period The north-south component, Bz, also increased to moderate levels following the CME onset, but steadily moderated to become weakly positive by the end of the period. Geomagnetic activity reached G1 Minor Storm (Kp5) levels for the 15/1200-1500 period, before steadily reducing to become Unsettled to Active (Kp3-4) and then Quiet (Kp1-2) to end the period.

Energetic Particles / Solar Radiation: No solar radiation storms were detected and proton counts remained comfortably below the S1/Minor solar radiation storm threshold - now very close to resting background levels after enhancements last UTC working week.

Four-Day Space Weather Forecast Summary

Solar Activity: Isolated Moderate flares are likely, with a slight chance of isolated strong flares. This risk primarily from the large a complex sunspot in the southwest disk.

Solar Wind / Geomagnetic Activity: The solar winds are currently declining from recent CME enhancement, likely around 380-400 km/s, although recent data gaps mean accurate assessment is difficult. Some fast wind enhancement possible though the period.

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Geomagnetic activity expected to remain at generally Quiet to Unsettled levels (Kp2-3), but with the risk of Active (Kp4) intervals into the UTC working week on arrival of any faster solar winds.

Energetic Particles / Solar Radiation: Solar radiation levels are expected to remain at Background levels, with just a slight but increasing chance of reaching S1 Minor Radiation Storm levels following any significant solar flares.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	1	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	70	70	70	70
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	15
Very Active	≥ S3 *	No	1	1	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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